COMPUTER MOUSE SIMULATOR HAVING SEE-THROUGH TOUCHSCREEN DEVICE AND EXTERNAL ELECTRONIC INTERFACE THEREFOR

STATEMENT AS TO RIGHTS TO INVENTIONS MADE UNDER FEDERALLY-SPONSORED RESEARCH AND DEVELOPMENT

Research and development of the present invention and application have not been Federally-sponsored, and no rights are given under any Federal program.

CROSS REFERENCES TO RELATED APPLICATIONS

The present application is a continuation-in-part of my copending application U.S. Ser. No. 07/726,389 filed Jul. 8, 1991, entitled COMPUTER MOUSE SIMULATOR DEVICE.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates accessories for computers, and more particularly to devices for facilitating the movement of a cursor to a particular point or area on the screen of a computer monitor.

2. Description of the Related Art Including Information Disclosed Under 37 CFR ÅÅ1.97–1.99

Touchscreens have been employed successfully for a number of years in connection with the control of movement of a cursor over a CRT monitor of a computer.

In general, touchscreens of necessity require accompanying hardware and software, where the hardware can be either located on-board the computer, or else contained in an accessory unit having the capability of plugging into one of the computer's expansion slots.

A number of touchscreen devices are currently being manufactured and sold by Elographics, of Oak Ridge, Tenn. All employ a dedicated controller (hardware) which is plugged into a serial port or expansion slot of the computer. Another product manufactured by Elographics is a mouse emulator for Microsoft Windows applications. A touch panel is installed over the face of a display monitor. A ribbon cable runs from the touchscreen panel to a controller board, which can either be installed in an expansion slot, or in a small external box. The touchscreen controller processes the touches, including scaling and translating the touch location coordinates, and setting baud rates, if needed, for proper communication between the controller and the host computer, via the expansion slot.

Another mouse-type device, known by the name INTERACT, is produced by Nematron, of Ann Arbor, Mich. This is a combination of hardware consisting of a touchscreen and accompanying software. The unit features a three square inch touchpad that can be employed in place of the touchscreen. The various functions available on a touchscreen can be largely duplicated by the touchpad.

Still another touch-sensitive controller is that manufactured by Micro Touch Systems, Inc., of Wilmington, Mass., and known as UnMouse. It consists of a touch-sensitive tablet that enables control of movement of the cursor at a greatly increased speed. This device is intended to be installed in an expansion slot of an existing Mac or PC.

All of the touchscreens noted above require an electronic interface to convert the analog voltages produced by touching the screen into appropriate digital information. The circuitry which performs the conversion is, to the best of my knowledge, always either connected to a serial input/output port on the computer, or located on an expansion card inserted into one of several expansion slots usually provided in most PCs. In addition, special software is almost always required in order render these systems compatible with the particular PC being employed.

There arise a number of disadvantages with the existing approaches to cursor control involving touchscreens and/or touchpad devices:

1. In particular, the required hardware to support such devices inevitably uses up at least one expansion slot of the machine, making this slot unavailable for other uses or applications. Alternately, the hardware must be connected to the serial input/output port of the computer.

2. Driver software must almost always be custom designed to each version of a particular PC in spite of certain similarities in PC hardware.

3. The necessity for use of additional software also results in a related tie-up of at least some of the useable memory or storage capacity, which is always considered a drawback.

4. The driver software must be checked for proper operation and compatibility with different application programs, in spite of apparent similarity in the PC hardware being employed.

5. Where touchscreens are mounted over the face of a CRT monitor, care must exercised in matching the curvature of the touchscreen to that of the monitor face. Since the monitor face is glass, and the touchscreen also employs a glass base, adjustment of this curvature is seldom, if ever, possible. As a result, the phenomenon known as parallax enters the picture, and control of the cursor through movement of the user's finger often becomes sloppy at best, resulting in poor resolution of movement and increased difficulty in use. Irritation and fatigue by the user is also commonly experienced.

6. In addition to the problems noted above in the previous paragraph, the relatively recent adoption of different screen sizes and configurations complicates the adaptability of touchscreens to a multiplicity of PCs, and thus a truly "universal" touchscreen adaptable to a wide variety of PCs is not available.

7. Where hardware manufactured by one company and software manufactured by a second company are combined, difficulties involving poor incompatibility or marginal compatibility are frequently present. Oftentimes the customer is left in somewhat of a dilemma, since his system may be down and neither manufacturer can, with definity, and charged with coming up with a "fix" to render the system operative, as a whole.

This potential incompatibility issue is especially true where the computer has a series of expansion slots and/or a serial input/output port, for connecting accessories to the computer.

8. Further, with most touchscreens which are applied directly over the front face of a monitor, the cursor jumps from a predetermined position to a point just beneath that where the user touches the screen, following which the user's view of the cursor can be often blocked by his own finger. The resulting resolution can be impaired, since it may be necessary to lift one's finger